

WHAT IS CLAIMED IS:

1. A multilumen catheter for directing the flow of blood through a patient through a single cannulation site, said catheter comprising:

a catheter having a proximal end, a first distal end, and a second distal end, said first distal end extending distally farther from the proximal end than the second distal end;

a first lumen extending between said first distal end and said proximal end;

a second lumen extending between said second distal end and said proximal end; and

a redirecting tip positioned at the distal end of one of the lumens and configured to redirect at least a portion of the blood flow exiting said lumen in a direction generally opposite of the direction of flow.

2. A multilumen catheter for directing the flow of blood through a patient through a single cannulation site, said catheter comprising:

a catheter having a proximal end, a first distal end, and a second distal end, said first distal end extending distally farther from the proximal end than the second distal end;

a first lumen extending between said first distal end and said proximal end;

a second lumen extending between said second distal end and said proximal end;

means for redirecting at least a portion of the blood flow exiting said lumen in a direction generally opposite of the direction of flow.

3. The multilumen catheter of Claim 2 wherein the redirecting means comprises a redirecting tip.

4. The multilumen catheter of Claim 2 wherein the redirecting means comprises a J-tip.

5. A multilumen catheter for directing the flow of blood through a patient through a single cannulation site, said catheter comprising:

a catheter having a proximal end, a first distal end, and a second distal end, said first distal end extending distally farther from the proximal end than the second distal end;

a first lumen extending between said first distal end and said proximal end; and
a second lumen extending between said second distal end and said proximal end.

6. The multilumen catheter of Claim 5, wherein the second lumen is positioned coaxially with the first lumen and has a diameter greater than the first lumen.

7. The multilumen catheter of Claim 5, further comprising a third lumen in fluid communication with the second lumen, said second and third lumens being positioned radially around the first lumen in a housing that surrounds said first lumen.

8. The multilumen catheter of Claim 7 further comprising a fourth lumen in fluid communication with the second and third lumens, said second, third and fourth lumens being positioned symmetrically radially around the first lumen in a housing that surrounds said first lumen.

9. A method of using the multilumen catheter of claim 6 comprising the steps of connecting the second lumen to the vessel via an anastomosis process and directing the first lumen through the vessel, thereby permitting a user to draw blood through the second lumen and redirect said blood into the first lumen.

10. An extracardiac pumping system for supplementing blood circulation through a patient without any component thereof being connected to the patient's heart, the extracardiac system comprising:

a multilumen catheter having at least two lumens therethrough, each lumen having a distal end configured for insertion into the patient's vasculature and a proximal end, at least two of said lumens being in fluid communication with each other at their proximal end; and

a pump secured within one of the lumens and configured to pump blood through the patient at subcardiac volumetric rates, the pump having an average flow rate that, during normal operation thereof, is substantially below that of the patient's heart when healthy,

whereby the pump may be operated to pump blood from one location in the patient's vasculature to a different location in the vasculature while the proximal end of each lumen resides outside the patient's body.

11. The extracardiac pumping system of Claim 10 wherein the multilumen catheter further comprises at least one aperture in one of the lumens positioned in the lumen distal from the distal end so that the aperture may reside within the patient's vasculature and close to the point of insertion when the multilumen catheter is inserted into the patient so that the aperture may maintain or enhance perfusion of blood to the patient's vasculature downstream of where the aperture resides in the vasculature when the catheter is inserted into the patient for treatment.

12. The extracardiac pumping system of Claim 10 wherein the multilumen catheter further comprises an additional lumen configured to be positioned entirely within the patient's vasculature.

13. The extracardiac pumping system of Claim 10 wherein at least one lumen of the multilumen catheter is longer than at least one other lumen.

14. The extracardiac pumping system of Claim 10 wherein the distal end of at least one lumen is tapered.

15. The extracardiac pumping system of Claim 10 wherein the multilumen catheter further comprises at least one aperture positioned proximal a distal end of at least one of the lumens.

16. The extracardiac pumping system of Claim 10 wherein the multilumen catheter further comprises a radiopaque marker, wherein the radiopaque marker can be used to position the catheter when the catheter is applied to a patient

17. The extracardiac pumping system of Claim 10 wherein the multilumen catheter further comprises a redirecting tip positioned at the distal end of one of the lumens and configured to re-direct at least a portion of the blood flow exiting said lumen in a direction generally opposite of the direction of flow of the blood through that lumen.